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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,361	11/27/2001	James G. Small	RAYTP0160US	9031

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EXAMINER

LEE, BENNY T

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 02/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.



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	5

DATE MAILED:

This is a communication from the examiner in charge of your application.

COMMISSIONER OF PATENTS AND TRADEMARKS

- ☒ This application has been examined ☐ Responsive to communication filed on \_\_\_\_\_ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire three (3) month(s), \_\_\_\_\_ day(s) from the date of this letter.  
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS APPLICATION

- |   |   |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice re Patent Drawing, PTO-948.                  |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449       | 3. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152 |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474      |   |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-31 are pending in the application.  
Of the above, claims \_\_\_\_\_ are withdrawn from consideration.  
\_\_\_\_\_ have been cancelled.  
2. ☐ Claims \_\_\_\_\_ are allowed.  
3. ☐ Claims \_\_\_\_\_ are rejected.  
4. ☒ Claims 1-17; 18-31 are objected to.  
5. ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.  
6. ☐ Claims \_\_\_\_\_  
7. ☐ This application has been filed with informal drawings which are acceptable for examination purposes until such time as allowable subject matter is indicated.  
8. ☐ Allowable subject matter having been indicated, formal drawings are required in response to this Office action.  
9. ☐ The corrected or substitute drawings have been received of \_\_\_\_\_. These drawings are: ☐ acceptable;  
☐ not acceptable (see explanation).  
10. ☐ The ☐ proposed drawing correction and/or the ☐ proposed additional or substitute sheet(s) of drawings, filed on \_\_\_\_\_, has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).  
11. ☐ The proposed drawing correction, filed \_\_\_\_\_, has been ☐ approved. ☐ disapproved (see explanation). However, the Patent and Trademark Office no longer makes drawing corrections. It is now applicant's responsibility to ensure that the drawings are corrected. Corrections **MUST** be effected in accordance with the instructions set forth on the attached letter "INFORMATION ON HOW TO EFFECT DRAWING CHANGES", PTO-1474.  
12. ☐ Acknowledgment is made of claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received.  
☐ been filed in parent application, serial no. \_\_\_\_\_, filed on \_\_\_\_\_.  
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 193 O.G. 11; 453 O.G. 213.  
14. ☐ Other \_\_\_\_\_

SN 995361

Art Unit: 2817

The disclosure is objected to because of the following informalities: Page 2, line 3, 4 and page 12, line 12, note that updated status information for the copending application should be provided. Page 6, line 11, note that --~~it~~-- should follow "wavelength" for clarity. Page 7, lines 2, 5, note that --(see Fig. 3)-- should follow "~~it~~" and "~~ra~~", respectively. Page 7, lines 11, 19 and page 8, line 15, note that --as seen in Fig. 2-- should follow "~~40~~", "~~42~~" and "~~Gp~~", respectively. Page 7, lines 13, 20 and page 9, lines 12, 14, note that --(see Fig. 2)-- should follow "~~56~~", "~~w<sub>b</sub>~~", "~~74~~" and "~~24~~", respectively. Page 13, line 28, <sup>2</sup>note that --as seen in Fig. 5-- should follow "~~B~~". Page 14, line 3, note that --(see Fig. 5)-- should follow "~~92~~"; line 24, note that --(see Fig. 7) -- should follow "~~8~~".

Appropriate correction is required.

The disclosure is objected to because of the following informalities: Note that for the collective description of Figs. 5, 6 and Figs. 8, 9, 10, all reference labels therein should be correspondingly described relative to the individual drawing figures in which they actually appear for consistency purposes.

Appropriate correction is required.

The drawings are objected to because in Figs. 4A, 4B, reference label --80--needs to be provided. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Art Unit: 2817

Claims 6; 18-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 6, note that "the H plane" lacks strict antecedent basis.

In claims 18, <sup>21, 23</sup>24, 26, 28, 29, 30, note that it is unclear which ones of the "N...electrodes" is intended by the recitation of "the electrodes" (e.g. all, some, etc). Clarification is needed.

In claim 20, note that the recitation of "a plurality of cylindrical cages" does not appear consistent with the claim 19 (from which it depends) recitation of "a (single) cylindrical cage".

In claim 21, note that the claim improperly depends from itself.

In claim 25, note that it is unclear how "an (single) ac potential" (cl 24) relates to "the ac potentials (plural) induced on adjacent interdigitated electrodes" (cl 25).

Clarification is needed.

In claim 30, note that it is unclear which one of the "at least one common resonant cavity" is intended by the recited "the common resonant cavity".

Clarification is needed.

-The following claims have been found objectionable for reasons set forth below:

In claim 2, note that --of a particular opening-- should follow "fields" for a proper characterization.

Art Unit: 2817

In claim ~~4~~, note that "formed" should be rewritten as --provided-- for a better characterization.

In claim ~~11~~, note that "form" should be rewritten as --define-- for a better characterization.

In claim 18, should the "electrical contacts" be --respectively attached to the anode and cathode-- to provide a complete characterization?; also note that "forming" should be rewritten as --providing--.

In claim ~~19~~, note that "form" should be rewritten as --provide--.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 9, 10 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by

Cook.

Cook (fig. 1) discloses a magnetron structure comprising a cathode (10) surrounded by an anode (12). The anode further includes vanes (16) protruding inwardly towards the cathode to provide a plurality of wedge shape resonant cavity sections (18) having narrow openings (17) adjacent the cathode such that a cathode-anode interaction space is located therebetween. A coaxial cavity resonator (20) surrounds the anode and is coupled to the resonant cavities via coupling irises (19). Although not explicitly depicted, magnetrons inherently include the

Art Unit: 2817

supplying of DC voltage/current between the anode and cathode and the presence of a magnetic field generator which collectively function to cause the electrons emitted by the cathode to move within the interaction space in the desired manner. Similarly, magnetrons operating in a  $\Pi$  mode inherently have adjacent cavity resonators  $180^\circ$  out of phase.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims ~~4~~, 5, 6, 7, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook in view of Sakiyami.

Cook discloses the claimed magnetron except that the cavity resonators therein are of the same size rather than of different sizes.

Sakiyami discloses a "rising sun" type of magnetron in which adjacent wedge shape resonators are of different sizes. As is evident from Figs. 1 and 3 therein, the "rising sun" type of magnetron is recognized as an alternative yet equivalent magnetron to the same size cavity resonator magnetron (Fig. 3).

Accordingly, it would have been obvious in view of the references, taken as a whole, to have alternatively realized the magnetron of Cook as being a "rising sun" type of magnetron. Such a modification being obvious in view of the recognized equivalents of these two types of magnetrons taught in Sakiyami, thereby suggesting the obviousness of such a modification. As

Art Unit: 2817

an obvious consequence of such a modification, the length of such different size resonators would have been different.

Claims 11-~~17~~; 18, 19, 21-25, 27-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook in view of either Burns or Crawford et al.

Cook discloses the claimed invention except that it's anode is not configured by interdigitated pins as claimed.

Note that Burns and Crawford et al pertain to anode structures configured as N pins which are arranged in a circular pattern and interdigitally configured such as to form a cage surrounding the cathode. In particular one-half of the pins protrude down from an upper ring (e.g. pole piece) while the remaining pins protrude upwards from a lower ring, such that the combination results in an interdigital anode configuration.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have modified the vane type anode of Cook to have alternatively been an interdigital pin type anode. Such a modification would have been considered an obvious substitution of art recognized equivalent anode structures which would not have altered the basic anode function, thereby suggesting the obvious modification.

Any inquiry concerning this communication should be directed to Benny Lee at telephone number (703) 3008-4902.

  
BENNY T. LEE  
PRIMARY EXAMINER  
ART UNIT 2817